

Claims

1. A method for encoding knowledge, comprising the steps of:
 - forming a network having nodes that represent semantic concepts;
 - associating one or more words with one or more of the nodes;
 - associating multimedia content with one or more of the nodes; and
 - representing relationships between the nodes as arcs between associated words and arcs between associated multimedia content.
2. The method of Claim 1, further comprising:
 - creating lexical relations between semantic concepts on the basis of one or more of: word forms and word meaning of associated words.
3. The method of Claim 1, wherein relationships between semantic concepts and between associated content are based at least in part on audio and/or visual feature descriptor values.
4. The method of Claim 3, further comprising:
 - extracting feature descriptors from multimedia content; and
 - computing similarity measures between descriptor values.
5. The method of Claim 1, wherein the media network knowledge is represented using the ISO MPEG-7 Description Definition Language.

6. A method for searching an encoded media network knowledge representation that comprises a network having nodes that represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes are represented as arcs between associated words and arcs between associated multimedia

5 content, the method comprising the steps of:

accepting a query;

matching the query to the words and multimedia content related to the concepts encoded in the media network knowledge representation;

navigating the relationship arcs of the concepts associated with matching words and multimedia content; and

retrieving related concepts, words, and multimedia content from the matched nodes or related nodes.

7. The method of Claim 6, further comprising:

forming a query comprised of words; and

15 matching the query words to the words encoded in the media network knowledge representation.

8. The method of Claim 6, further comprising:

forming a query comprised of multimedia content; and

20 matching the query content to the multimedia content encoded in the media network knowledge representation.

9. The method of Claim 6, further comprising:
- forming a query comprised of audio and/or visual feature descriptor values; and
- matching the query descriptor values to the descriptor values of the content encoded in the media network knowledge representation.
- 5 10. A method for browsing an encoded media network knowledge representation that comprises a network having nodes that represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:
- displaying one or more concept nodes and associated words and/or multimedia content;
- and
- providing means for allowing a user to select related concepts for viewing.
11. The method of Claim 10, further comprising:
- providing means for allowing the user to select concept nodes and associated words and/or multimedia content for display on the basis of specific types or values of relations to a particular concept node or associated word or multimedia content.
- 15 12. A method for summarizing an encoded media network knowledge representation that comprises a network having nodes that represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes

are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:

extracting a subset of nodes, relations, and words and/or multimedia content from an encoded media network knowledge representation.

5 13. The method of Claim 12, further comprising:

consolidating together concept nodes, relations, words, and/or multimedia content.

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14. A method for updating an encoded media network knowledge representation that comprises a network having nodes that represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:

adding, deleting or modifying concepts, relations, or associated words, multimedia content, or descriptors in the encoded media network knowledge representation.

15. A method for querying a multimedia information repository associated with an encoded media network knowledge representation that comprises an encoded network having nodes that represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:

searching the encoded media network knowledge representation;

retrieving words, content, and/or descriptors from the media network knowledge representation; and

searching the information repository using the retrieved words, content, and/or descriptors.

5 16. A method for personalizing multimedia information in a system comprising an encoded media network knowledge representation that includes an encoded network having nodes that

represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:

describing the multimedia information using words or descriptors;

describing user preferences using words, multimedia content, and/or descriptors;

matching the user preferences with the descriptions of the multimedia information; and

extracting, retrieving, and/or summarizing the matched multimedia items.

17. A system for encoding knowledge, comprising:

15 means for forming a network having logical nodes that represent semantic concepts;

means for associating one or more words with one or more of the nodes;

means for associating multimedia content with one or more of the nodes; and

means for representing relationships between the nodes as arcs between associated words and arcs between associated multimedia content.

18. The system of claim 17, further comprising means for searching the knowledge encoded in the network.

19. The system of claim 17, further comprising means for browsing the knowledge encoded in the network.

5 20. The system of claim 17, further comprising means for updating the knowledge encoded in the network.

21. The system of claim 17, further comprising means for summarizing the knowledge encoded in the network.

22. The system of claim 17, further comprising means for querying a multimedia information repository associated with the knowledge encoded in the network.

23. The system of claim 17, further comprising means for personalizing the knowledge encoded in the network for a particular user.

24. A computer program product in a computer readable medium for use for encoding knowledge, the computer program product comprising:

15 first instructions for forming a network having logical nodes that represent semantic concepts;

second instructions for associating one or more words with one or more of the nodes;

third instructions for associating multimedia content with one or more of the nodes; and
fourth instructions for representing relationships between the nodes as arcs between
associated words and arcs between associated multimedia content .